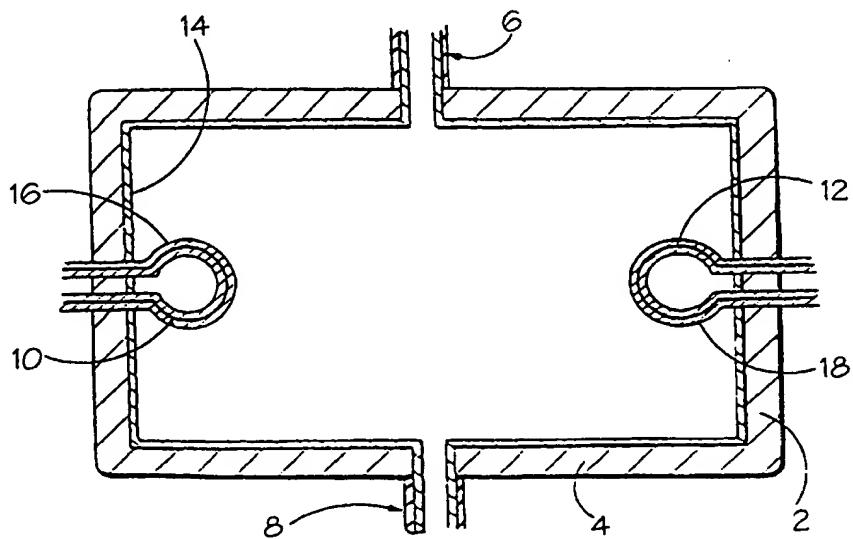




INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification ⁷ : G01N 22/00		A1	(11) International Publication Number: WO 00/43759
			(43) International Publication Date: 27 July 2000 (27.07.00)
(21) International Application Number: PCT/GB00/00168	(81) Designated States: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).	(22) International Filing Date: 24 January 2000 (24.01.00)	
(30) Priority Data: 9901304.7 22 January 1999 (22.01.99) GB			
(71) Applicant (for all designated States except US): THE UNIVERSITY OF LIVERPOOL [GB/GB]; Senate House, Abercromby Square, Liverpool L69 3BX (GB).			
(72) Inventors; and			
(75) Inventors/Applicants (for US only): LUCAS, James [GB/GB]; 12 Sunnidale Drive, Blundellsands, Liverpool L23 7XA (GB). AL-SHAMMAA, Ahmed [GB/GB]; University of Liverpool, Dept. of Electrical Engineering & Electronics, Brownlow Hill, Liverpool L69 3GJ (GB).			
(74) Agent: W.P. THOMSON & CO.; Coopers Building, Church Street, Liverpool L1 3AB (GB).			

(54) Title: APPARATUS AND METHOD FOR DETERMINING DIELECTRIC PROPERTIES OF AN ELECTRICALLY CONDUCTIVE FLUID



(57) Abstract

An apparatus is disclosed for determining dielectric properties of an electrically conductive fluid. The apparatus comprises an electromagnetically resonant cavity (2, 4, 6, 8) which may form part of a pipeline. An insulating layer (14) isolates the cavity's conductive wall from fluid within the cavity. An emitter antenna (10) and associated drive electronics are provided for emitting electromagnetic radiation into the cavity and the antenna is electrically isolated from fluid in the cavity. Means (12) are also provided for detecting resultant electromagnetic radiation in the cavity. The apparatus may be used in multi-phase metering.